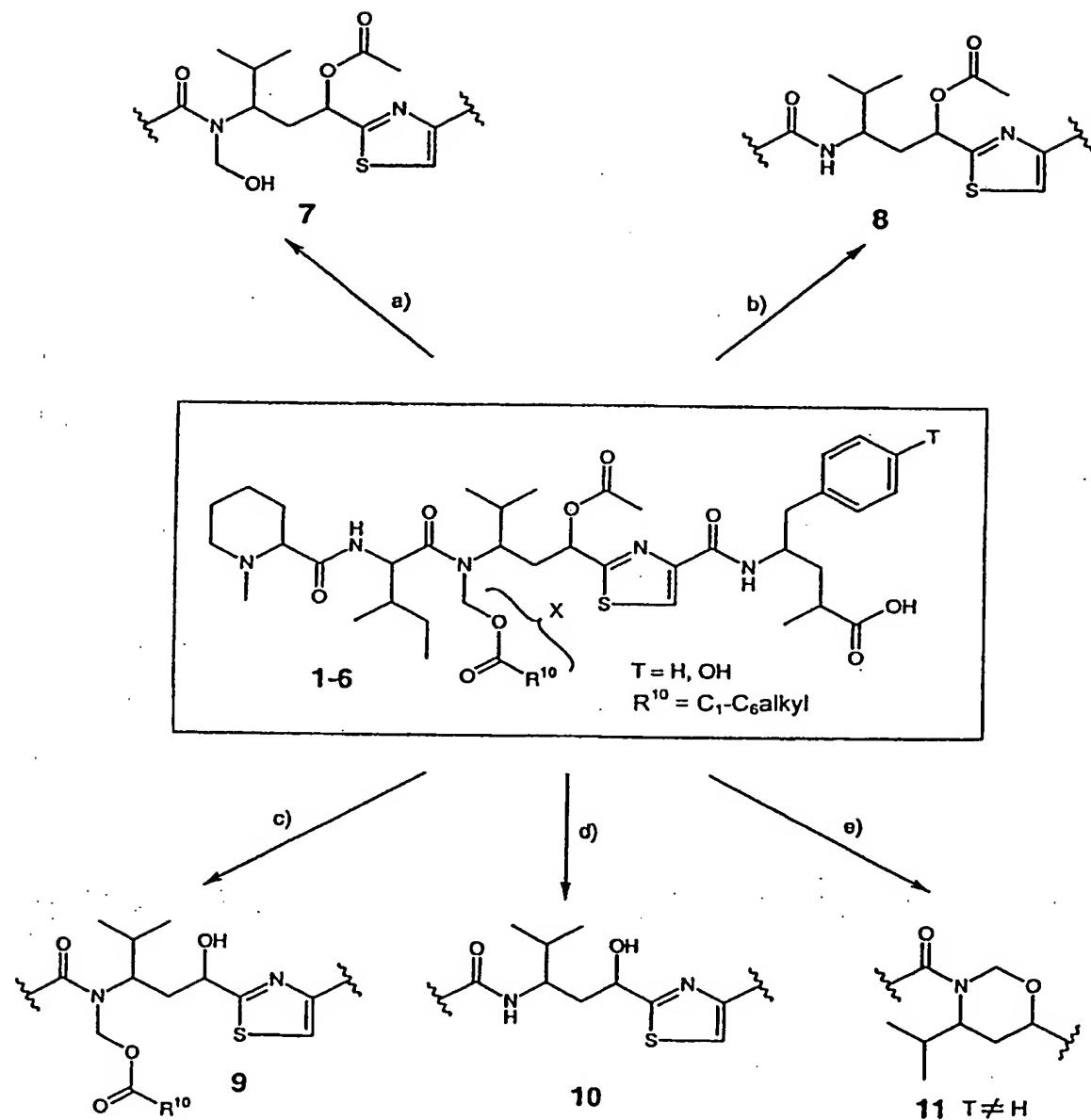


Figure 1



a) 0.1 M HCl, dioxane, 50°C; b) 0.1 M HCl, 100°C; c) NH₃, MeOH; d) 1 M NaOH, MeOH; e) 0.5 M HCl, 100°C

Figure 2

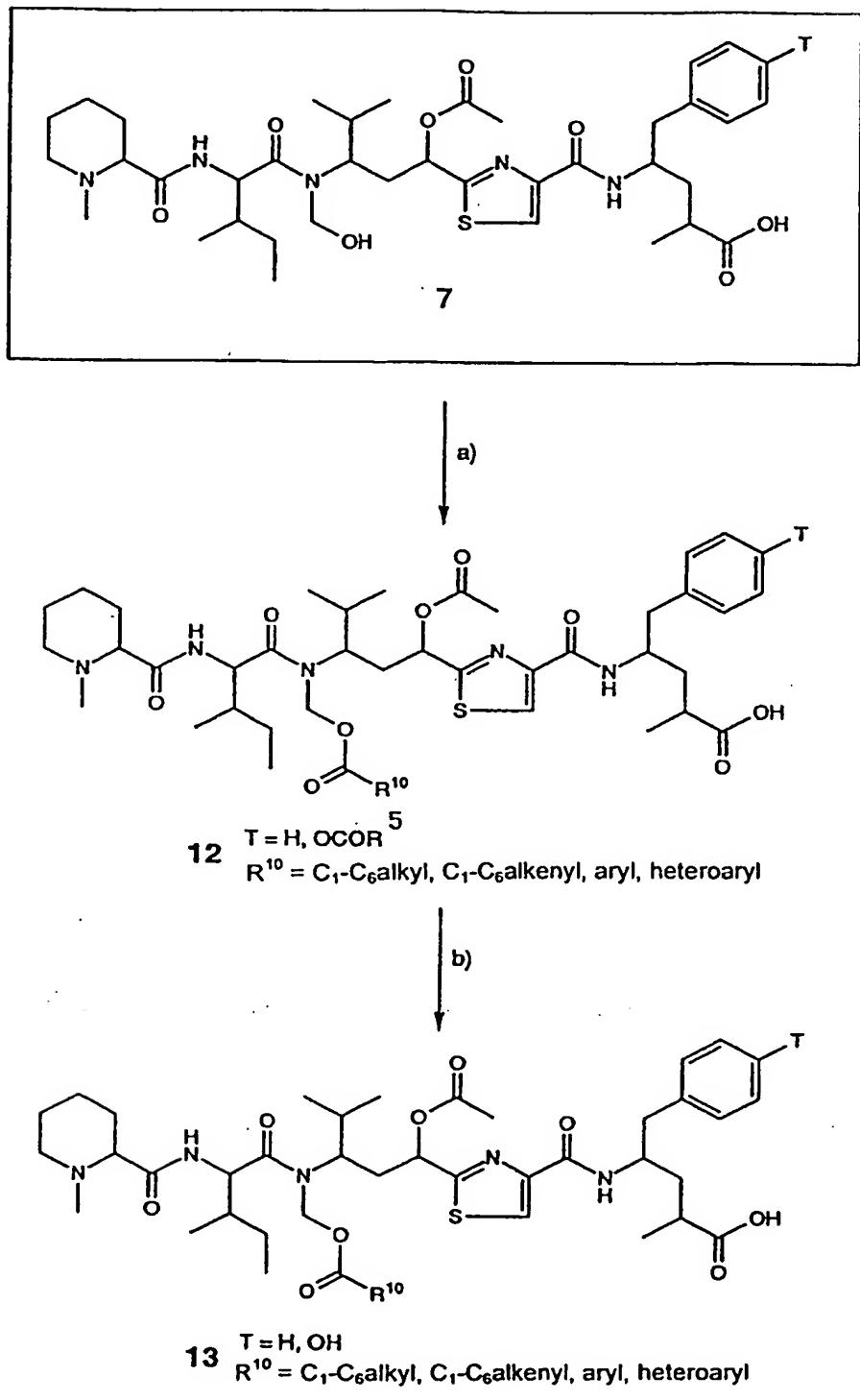
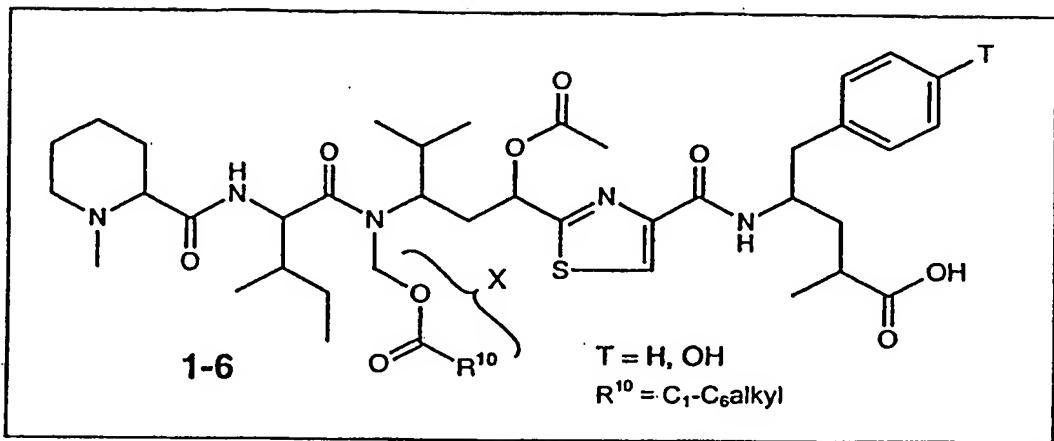
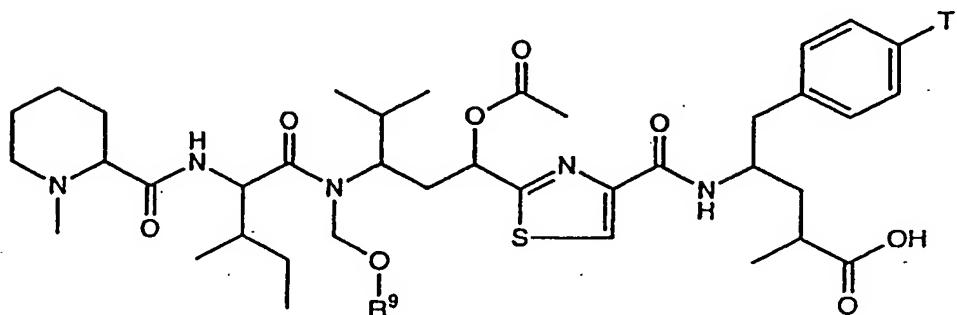


Figure 3



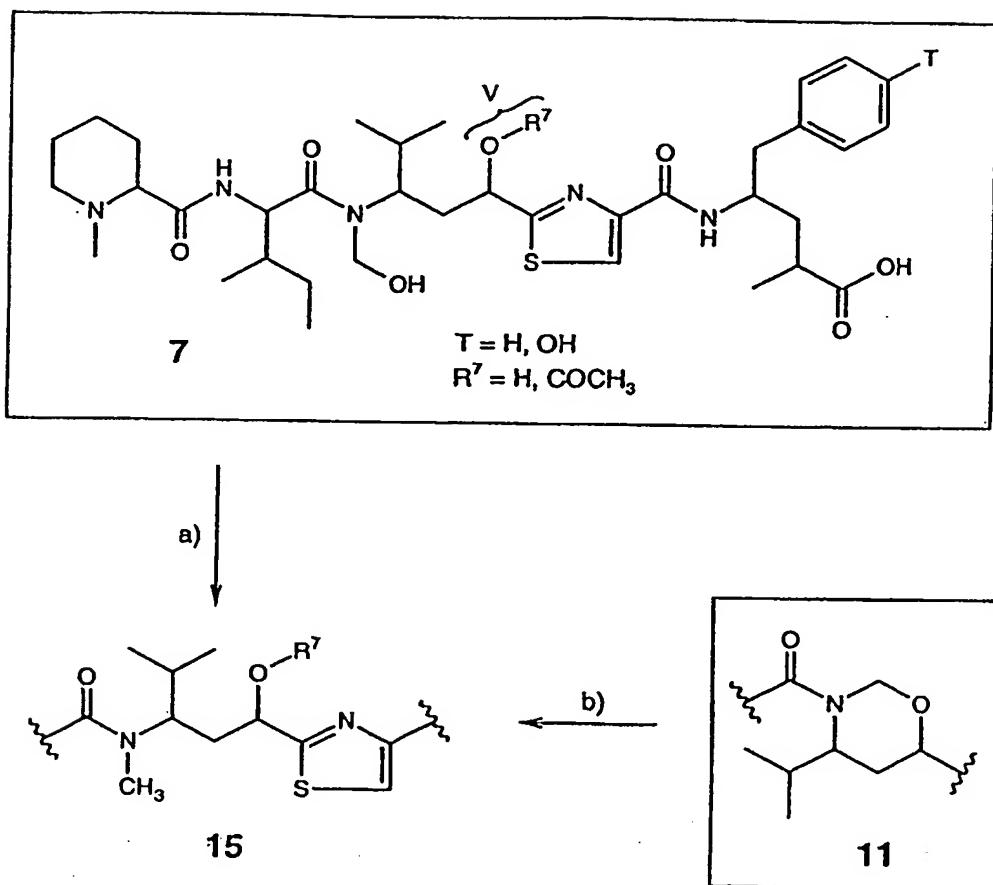
a)



14 R⁹ = C₁-C₄alkyl, alkenyl, aryl

a) p-CH₃-C₆H₄SO₂OH, R⁹OH, THF, 80°C

Figure 4



a) $NaCNBH_3$, TFA, MeOH; b) $NaCNBH_3$, Me_3SiCl , CH_3CN

Figure 5

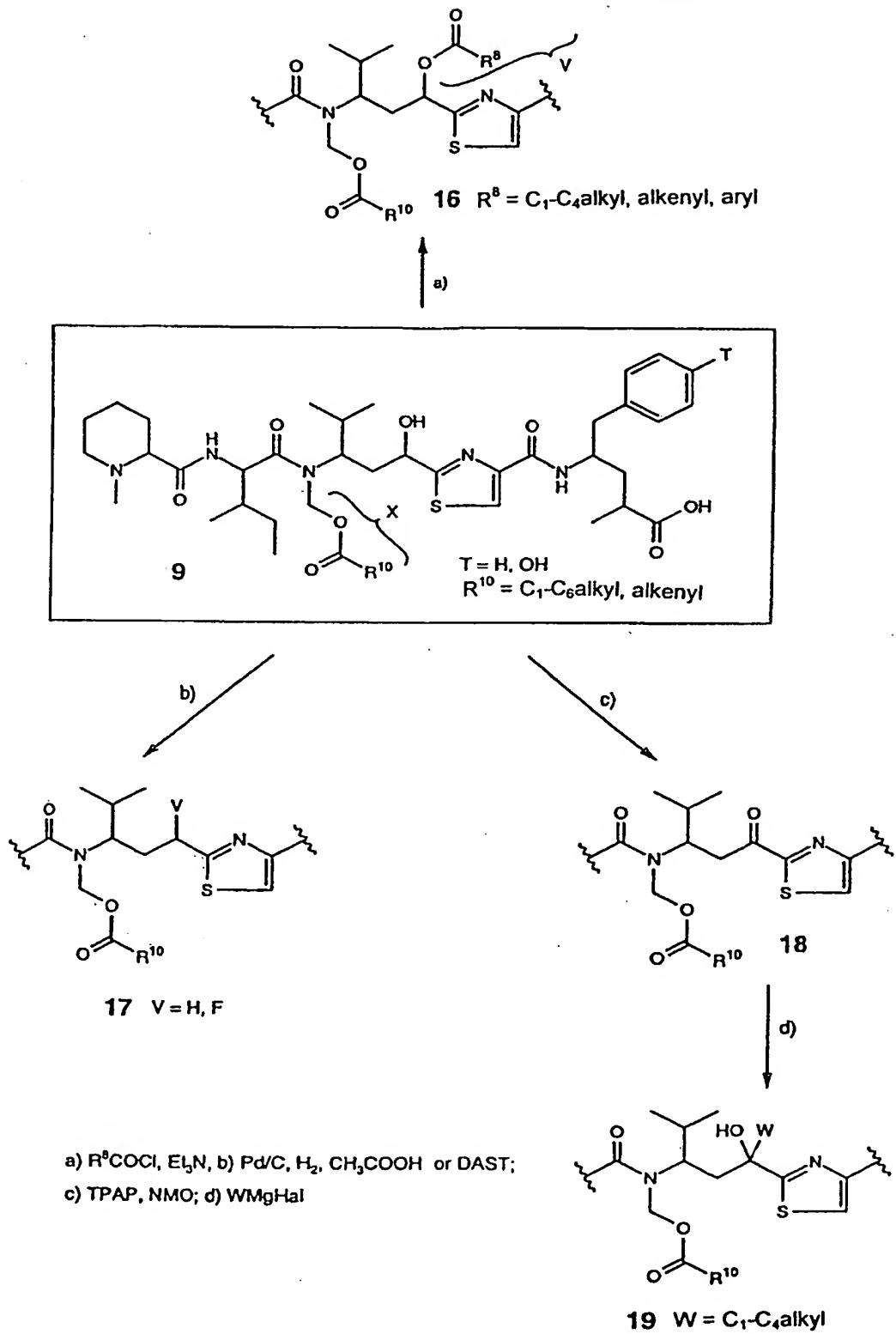
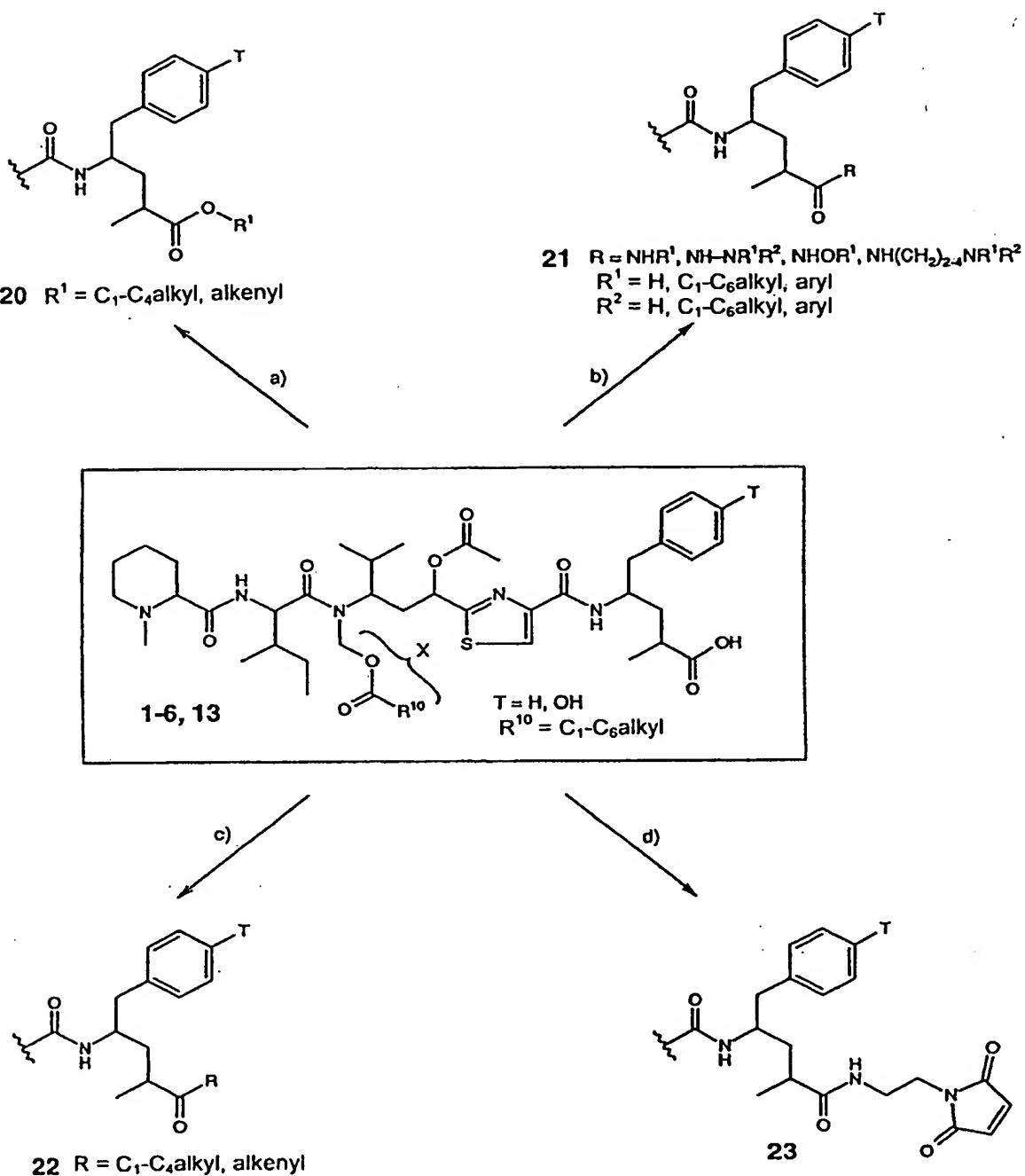


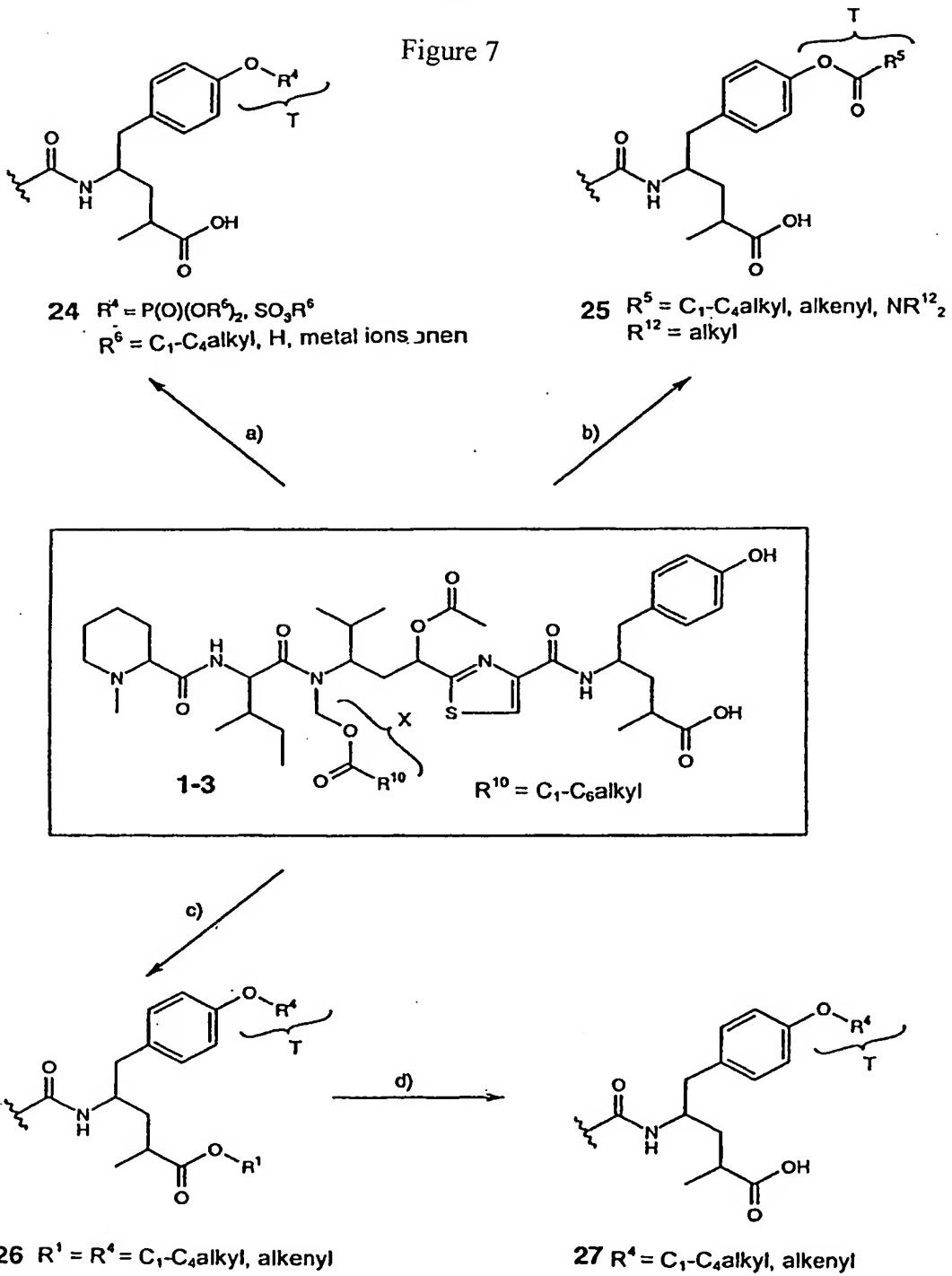
Figure 6



a) EDC, R^1OH , DMAP, CH_2Cl_2 ; b) EDC, RH, CH_2Cl_2 or isobutyl chloroformate, Bz_2N , RH, abs. THF
 c) RLi; d) EDC, 1-(2-aminoethyl)-pyrrole-2,5-dione, CH_2Cl_2

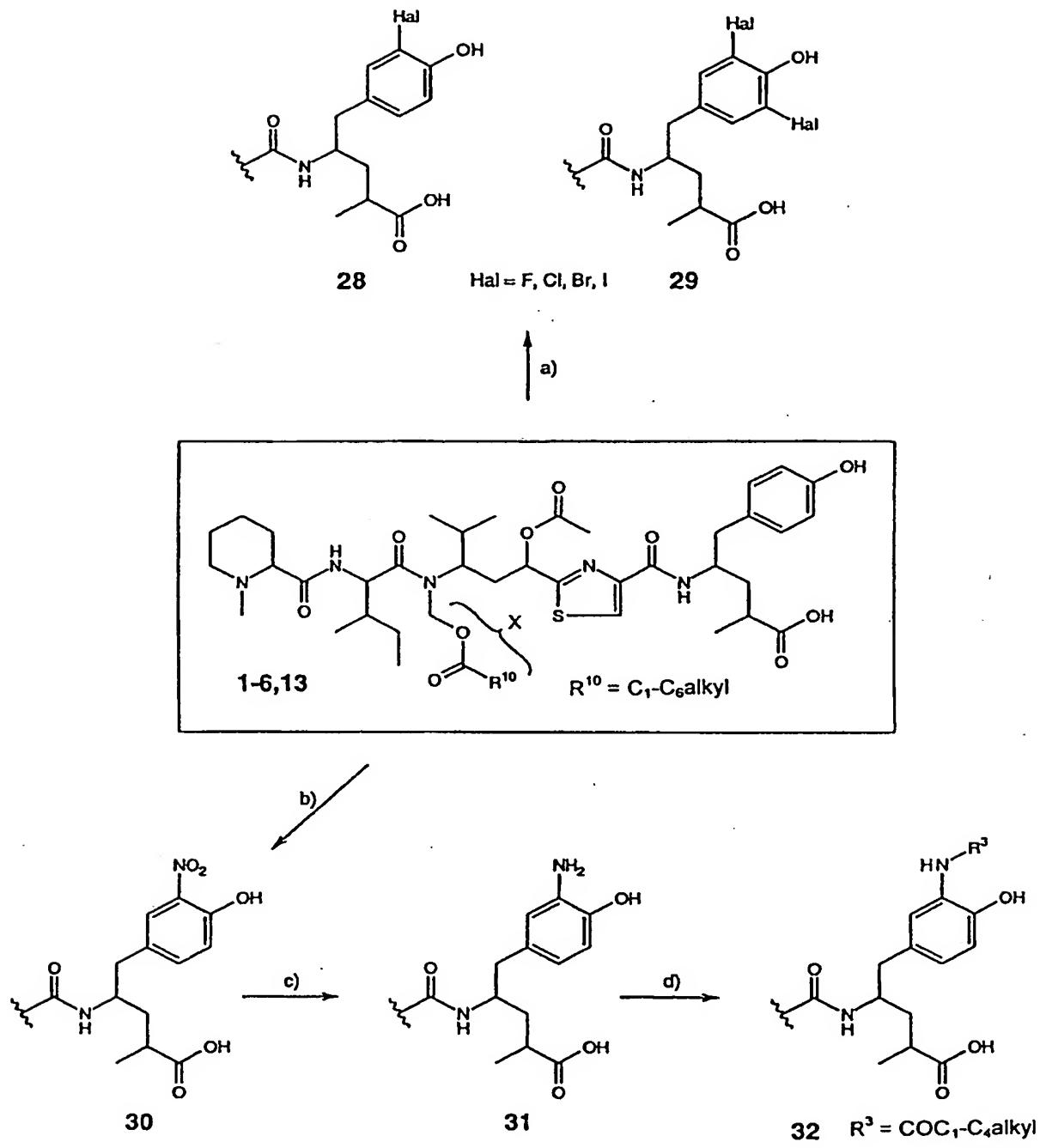
7/9

Figure 7



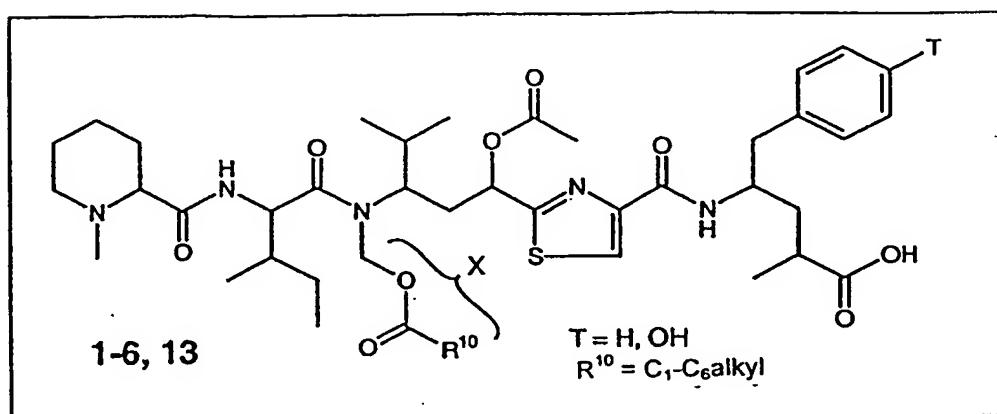
a) $P(O)(OR^6)_2OH, Li, \text{pyridine}, CH_2Cl_2$ or pyridine-SO_3 ; b) $R^5COCl, Et_3N, \text{abs. THF}$;
 c) Ag_2O, R^4I, CH_2Cl_2 ; for $R^4 = CH_3: CH_2N_2, MeOH$; d) pig liver esterase, KH_2PO_4 buffer, $36^\circ C$;

Figure 8

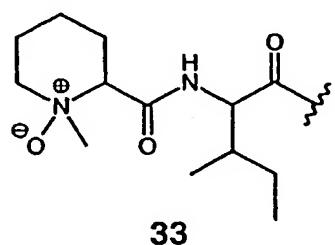


a) $\text{C}_5\text{Cl}_5\text{NF}$ triflate, SO_2Cl_2 , NBS, ICl; b) NaNO_2 , CH_3COOH , EtOH; c) Pd/C, H_2 , EtOH; d) $(\text{R}^3\text{CO})_2\text{O}$

Figure 9

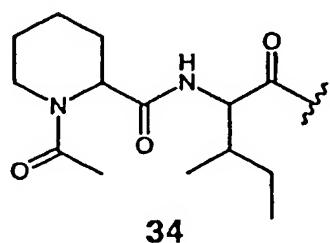


a)



33

b)



34

a) *m*-CPBA, CH₂Cl₂; b) Ac₂O, 75°C